

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF ILLINOIS

UNITED STATES OF AMERICA,
STATE OF ILLINOIS,

Plaintiffs,

v.

KERR-MCGEE CHEMICAL LLC,

Defendant.

CIVIL ACTION NO. _____

VOLUME 11

OF 11

APPENDICES TO CONSENT DECREE

**INDEX OF APPENDICES TO THE CONSENT DECREE
IN UNITED STATES AND ILLINOIS V. KERR-MCGEE CHEMICAL LLC
(N.D. ILLINOIS)**

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Consent Decree in the matter of United States and Illinois v. Kerr-McGee Chemical LLC,
relating to the Kerr-McGee West Chicago NPL Sites.

APPENDIX N

STP ROD CLARIFYING MEMORANDUM TO FILE

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5**

DATE: MAR 07 2005

SUBJECT: Kerr-McGee Sewage Treatment Plant Site Record of Decision
Clarifying Memo to File

FROM: Rebecca Frey
Remedial Project Manager

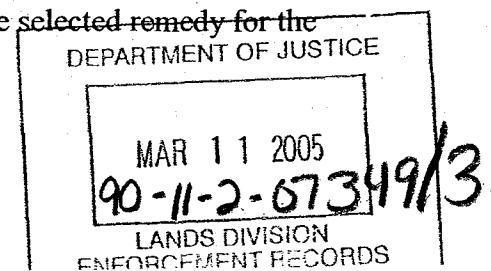
THROUGH: Richard C. Karl, Director
Superfund Division

TO: File

USEPA Region 5 signed the Record of Decision (ROD) for the Kerr-McGee Sewage Treatment Plant (STP) site on September 30, 2004. This memorandum clarifies certain terms used in the ROD to better reflect USEPA's intent. These clarifications do not alter the scope, performance, or cost of the remedy selected in the STP ROD, nor do the clarifications affect any component of the remedy. Because these clarifications are considered minor changes to the ROD, this memorandum to the site file is sufficient documentation of such changes. (See Chapter 7 of "A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Documents," OSWER 9200.1-23.P (July 1999), which addresses documenting post-ROD changes.)

The STP site is one of four Kerr-McGee National Priorities List sites in DuPage County, Illinois. All four sites were contaminated with radioactive thorium that originated at the Rare Earths Facility in West Chicago, Illinois. Two of the sites, the STP site and the Kress Creek/West Branch DuPage River (Kress Creek) site, contain contaminated riverine areas. Due to the similarity of the nature of the contamination and cleanup options, the STP and Kress Creek sites both were addressed in the same Remedial Investigation and Feasibility Study reports. For the same reasons, the proposed plans for the STP and Kress Creek sites were released concurrently (in the same proposed plan fact sheet) for public comment.

After the STP ROD was signed and during negotiations related to the site, questions arose regarding the ROD's use of the term "targeted materials." In the ROD (and in the proposed plan) the term was defined as materials exceeding 7.2 picoCuries per gram (pCi/g) combined radium. Additionally, both documents stated that targeted materials would be excavated to pre-determined depths based on the extensive characterization data from the site. This memorandum clarifies the meaning of "targeted materials" and the requirements of the selected remedy for the STP site.



The term "targeted materials" was first defined in the *Feasibility Study Report* (May 2004) at Section 2.5, which included a description of the characterization activities that were conducted to identify and define the extent of contamination at the STP and Kress Creek sites. First, surface gamma scans were conducted to identify areas where there were gamma readings greater than 7.2 pCi/g total radium. Subsurface delineation borings then were conducted to define the vertical and horizontal extent of such materials. The materials identified through this process are the "targeted materials" discussed throughout the *Feasibility Study Report*. The 7.2 pCi/g criterion was derived from relevant and appropriate federal and state environmental regulations.

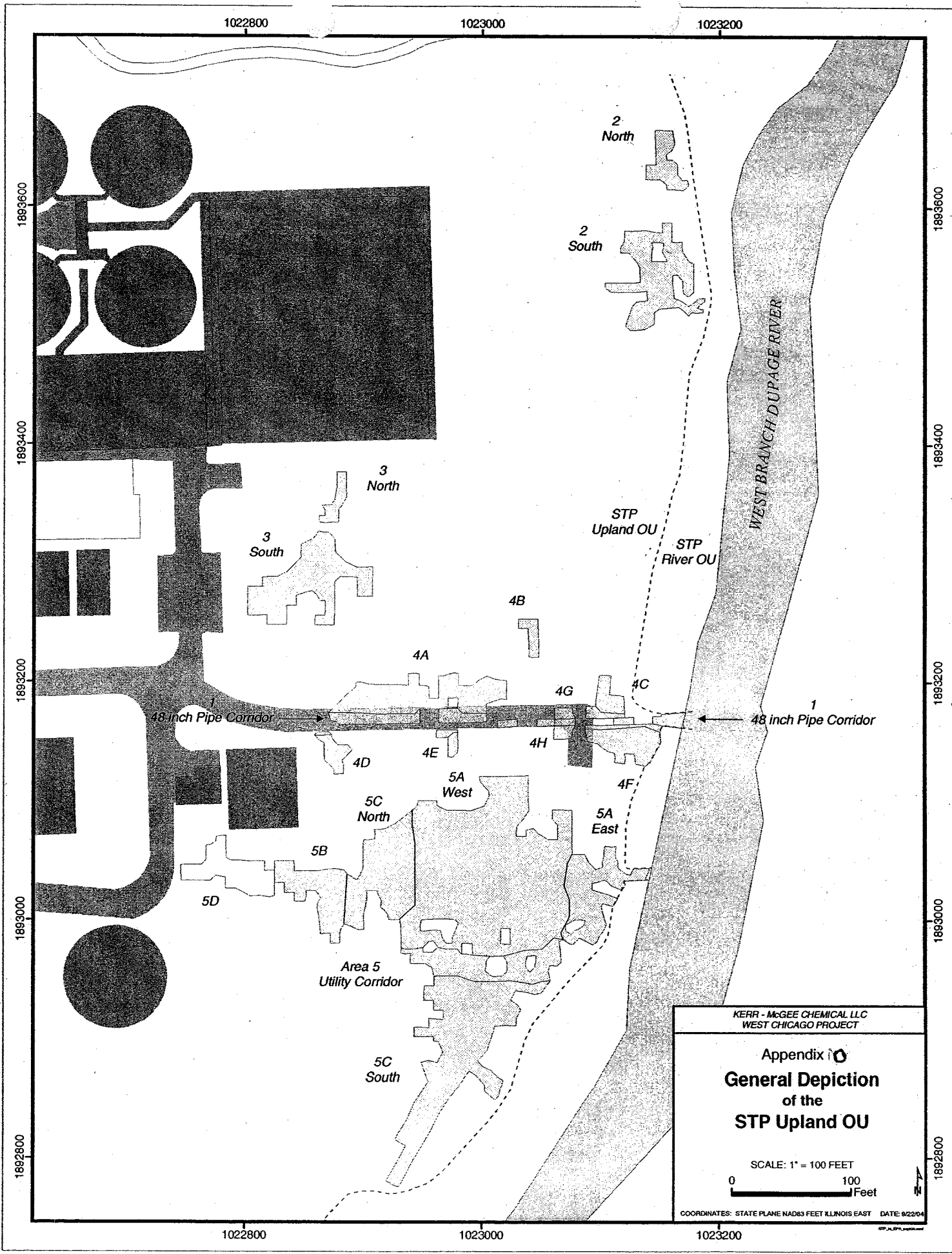
USEPA approved the process that was used to identify and define the extent of contamination at the sites and agrees with the meaning of the term "targeted materials" described above. USEPA's intent when it issued the proposed plan and the STP ROD was that the selected remedy – "Excavation and Off-Site Disposal of Targeted Sediment/Soil Throughout the Site" – requires the excavation and off-site disposal of only the targeted materials that have been identified through the process described above. Specific excavation "envelopes" will be developed based on the extensive characterization data, and it is the targeted materials contained within those excavation envelopes that must be removed from the site. While all the targeted materials exceed 7.2 pCi/g, the selected remedy does not require excavation of any and all materials that exceed 7.2 pCi/g. It is conceivable that there may be some amount of such buried material that was not detected despite the extensive characterization efforts conducted at the site. The STP ROD does not require that such undetected materials (if any) be found and remediated. USEPA's plain intent is evident in both the proposed plan and the STP ROD when those documents state that, under the selected remedy, targeted materials will be excavated to *predetermined cut depths based on the available extensive characterization data*. To avoid any ambiguity or misunderstanding, however, this memorandum further clarifies and documents USEPA's intent.

In summary, all interpretations of the term "targeted materials" in the STP ROD shall mean "materials at the site within pre-defined excavation envelopes developed by delineation drilling in areas where radiological surface scans indicated the presence of materials exceeding 7.2 pCi/g combined radium. The 7.2 pCi/g criterion was derived from relevant and appropriate federal and state environmental regulations." Furthermore, based on the similarities between the STP and Kress Creek sites, USEPA's intent is that the remedies for both sites be the same. Accordingly, USEPA anticipates that the ROD for the Kress Creek site (when issued) will fully incorporate the clarifications described in this memorandum.

Consent Decree in the matter of United States and Illinois v. Kerr-McGee Chemical LLC,
relating to the Kerr-McGee West Chicago NPL Sites.

APPENDIX O

GENERAL DEPICTION OF THE STP UPLAND OU



KERR - MCGEE CHEMICAL LLC
WEST CHICAGO PROJECT

Appendix 10
**General Depiction
of the
STP Upland OU**

SCALE: 1" = 100 FEET



COORDINATES: STATE PLANE NAD83 FEET ILLINOIS EAST DATE: 8/22/04

Consent Decree in the matter of United States and Illinois v. Kerr-McGee Chemical LLC,
relating to the Kerr-McGee West Chicago NPL Sites.

APPENDIX P

STP UPLAND OU ADMINISTRATIVE ORDER ON CONSENT

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:

THE KERR-MCGEE SEWAGE
TREATMENT PLANT SITE UPLAND
OPERABLE UNIT.

WEST CHICAGO AND
DUPAGE COUNTY, ILLINOIS,

RESPONDENT:
KERR-MCGEE CHEMICAL, LLC.

ADMINISTRATIVE ORDER ON
CONSENT FOR REMOVAL ACTION

U.S. EPA Region 5
CERCLA Docket No.

V-W-04-C-762

Proceeding Under Sections 104, 106(a), 107
and 122 of the Comprehensive
Environmental Response, Compensation,
and Liability Act, as amended, 42 U.S.C.
§§ 9604, 9606(a), 9607 and 9622

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I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Order on Consent ("Order") is entered into voluntarily by the United States Environmental Protection Agency ("U.S. EPA") and Respondent Kerr-McGee Chemical, LLC ("Respondent"). This Order provides for the performance of a removal action by Respondent at the Sewage Treatment Plant Site ("STP Site") Upland Operable Unit ("STP Upland OU ") in West Chicago, Illinois. This Order does not require Respondent to pay costs the United States has incurred and will incur at, in connection with, or in the vicinity of the STP Site because the Parties have agreed to attempt to negotiate, after the Effective Date of this Order, a comprehensive resolution of all remaining matters related to response actions and response costs associated with all four of the Kerr-McGee West Chicago National Priorities List ("NPL") Sites, including the STP Site, the Residential Areas Site ("RAS"), the Reed-Keppler Park Site ("RKP Site"), and the Kress Creek/West Branch of the DuPage River Site ("Kress Creek Site") in West Chicago and DuPage County, Illinois.

2. This Order is issued under the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended ("CERCLA").

3. U.S. EPA has notified the State of Illinois (the "State") of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

4. U.S. EPA and Respondent recognize that this Order is a compromise that has been negotiated in good faith, and neither the agreement by Respondent to the Order nor the actions undertaken by Respondent in accordance with this Order constitute an admission of any liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Order, the validity of the findings of facts, conclusions of law, and determinations in Sections IV and V of this Order. Respondent agrees to comply with and be bound by the terms of this Order and further agrees that it will not contest the basis or validity of this Order or its terms.

II. PARTIES BOUND

5. This Order applies to and is binding upon U.S. EPA and upon Respondent and Respondent's heirs, receivers, trustees, successors and assigns. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter Respondent's responsibilities under this Order.

6. Commencing on the Effective Date of this Order and continuing until the date of U.S. EPA's written notice of completion of work pursuant to Section XXV, Respondent shall ensure that its contractors, subcontractors, and representatives receive a copy of this Order and comply with this Order. Respondent shall be responsible for any noncompliance with this Order. Respondent shall provide a copy of this Order to any subsequent owners or successors before ownership rights or stock or assets are transferred in a corporate acquisition, merger or sale.

III. DEFINITIONS

7. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Order or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

- a. "Action Memorandum" shall mean the U.S. EPA Action Memorandum relating to the STP Site signed on October 7, 2002, by the Regional Administrator, U.S. EPA Region 5, or his delegate, and all attachments thereto. The "Action Memorandum" is attached as Appendix A.
- b. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq.*
- c. "Day" shall mean a calendar day. In computing any period of time under this Order, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.
- d. "Effective Date" shall be the effective date of this Order as provided in Section XXVIII.
- e. "IEMA/DNS" shall mean the Illinois Emergency Management Agency, Division of Nuclear Safety (formerly the Illinois Department of Nuclear Safety) and any successor departments or agencies of the State.
- f. "IEPA" shall mean the Illinois Environmental Protection Agency and any successor departments or agencies of the State.
- g. "Interest" shall mean interest at the rate specified for interest on investments of the U.S. EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.
- h. "Municipal sewage sludge" shall mean any solid, semi-solid, or liquid residue removed during the treatment of municipal waste water or domestic sewage, and may include residue removed, all or in part, during the treatment of wastewater from manufacturing or processing operations,

provided that such residue has essentially the same characteristics as residue removed during the treatment of domestic sewage.

- i. "Municipal solid waste" shall mean household waste and solid waste collected from non-residential sources that is essentially the same as household waste. While the composition of such wastes may vary considerably, municipal solid waste generally is composed of large volumes of non-hazardous substances (*e.g.*, yard waste, food waste, glass, and aluminum) and can contain small amounts of other wastes as typically may be accepted in RCRA Subtitle D landfills.
- j. "National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.
- k. "Order" shall mean this Administrative Order on Consent and all appendices attached hereto. In the event of conflict between this Order and any appendix, this Order shall control.
- l. "Paragraph" shall mean a portion of this Order identified by an Arabic numeral.
- m. "Parties" shall mean U.S. EPA and Respondent.
- n. "RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).
- o. "Respondent" shall mean Kerr-McGee Chemical, L.L.C..
- p. "Section" shall mean a portion of this Order identified by a Roman numeral.
- q. "Sewage Treatment Plant Site" or "STP Site" or "Site" shall mean the Kerr-McGee West Chicago NPL Sewage Treatment Plant Site located in West Chicago and DuPage County, Illinois, which encompasses (i) the West Chicago Sewage Treatment Plant located adjacent to the West Branch DuPage River at Illinois Routes 59 and 38, Sarana Drive, West Chicago, Illinois; and (ii) the West Branch of the DuPage River from the northern boundary of West Chicago Sewage Treatment Plant to the West Branch's confluence with Kress Creek in West Chicago. The Site is depicted generally on the map attached as Appendix B.

- r. "Sewage Treatment Plant Upland Operable Unit" or "STP Upland OU" shall mean the approximately 25 acres where the West Chicago Sewage Treatment Plant is located at Illinois Routes 59 and 38, Sarana Drive in the City of West Chicago. The eastern boundary of the STP Upland OU is designated by a black line of dashes set forth on the map attached as Appendix C, except however, that the eastern portion of the STP Upland OU also includes the bank area where Waste Materials are located around or beneath the West Chicago Sewage Treatment Plant NPDES discharge pipe and the City of West Chicago storm sewer discharge pipe as they enter the West Branch of the DuPage River.
- s. "State" shall mean the State of Illinois.
- t. "U.S. EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.
- u. "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).
- v. "Work" shall mean all activities Respondent is required to perform under this Order and the attached Work Plan.
- w. "Work Plan" shall mean the document attached to this Order in Appendix D.

IV. FINDINGS OF FACT

8. Based on available information, including the Administrative Record and Action Memorandum in this matter, U.S. EPA hereby finds, and, for purposes of enforceability of this Order only, Respondent stipulates that the factual statutory prerequisites under CERCLA necessary for issuance of this Order have been met. U.S. EPA's findings and this stipulation include the following:

- a. The STP Site is located in West Chicago and DuPage County, Illinois. The STP Site includes the STP Upland OU that is owned and operated by the City of West Chicago.
- b. From approximately 1932 through 1973, the Rare Earths Facility ("REF"), located in West Chicago, Illinois, conducted thorium and rare earths processing that created mill tailings and other process wastes. The mill

tailings and other process wastes contained radionuclides and heavy metals, including lead, barium, chromium, and cadmium.

- c. Radioactive tailings and process wastes were disposed of at the STP Site in order to, inter alia, fill a decommissioned sludge holding tank, contour grounds and mix with landfill wastes. The STP Site was listed on the NPL on August 30, 1990. 55 Fed. Reg. 35502.
- d. Respondent is a successor to the companies that operated the REF, which was the source of the mill tailings.
- e. Respondent has undertaken removal actions at the RAS and the RKP Site pursuant to Unilateral Administrative Orders V-W-95-C-272 and V-W-96-C-364.
- f. Consistent with Respondent's Radioactive Material License and amendments thereto, Respondent is authorized to temporarily store the radioactively-contaminated material removed from the STP Upland OU at the REF, where the materials are prepared for shipping to an out-of-state facility licensed to accept the materials.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

9. Based on the Findings of Fact set forth above and the Administrative Record supporting this removal action, U.S. EPA has determined that:

- a. The STP Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
- b. The contamination found at the STP Site, including the STP Upland OU, includes "hazardous substance(s)" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).
- c. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
- d. Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is jointly and severally liable under CERCLA. Respondent is a successor to companies that allegedly arranged for disposal or transport for disposal of hazardous substances at the STP Upland OU. Respondent therefore may be liable under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

- e. The presence of hazardous substances at the STP Site or the past, present or potential migration of hazardous substances currently located at or emanating from the STP Site, or the placement of hazardous substances from the STP Site onto off-site areas constitute actual and/or threatened "releases" of hazardous substances from the facility into the "environment" as defined by Sections 101(8) and (22) of CERCLA, 42 U.S.C. §§ 9601(8) and (22).
- f. The actions required by this Order are necessary to protect the public health, welfare, or the environment, and are not inconsistent with the NCP and CERCLA.

VI. ORDER

10. Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for the STP Site, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Order, including, but not limited to, all attachments to this Order and all documents incorporated by reference into this Order.

VII. DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR, AND ON-SCENE COORDINATOR

11. Respondent has selected a contractor known as Blasland, Bouck & Lee, Inc. ("BBL") to perform the actions required by this Order. If Respondent decides to retain a different or an additional contractor(s) to perform any actions required by this Order, Respondent shall notify U.S. EPA of the name and qualifications of such contractor(s) within 10 days prior to the commencement of work by that contractor(s). U.S. EPA retains the right to disapprove of any of the contractors and/or subcontractors retained by Respondent. If U.S. EPA disapproves a selected contractor, Respondent shall retain a different contractor within 10 calendar days following U.S. EPA's disapproval, and shall notify U.S. EPA of that contractor's name and qualifications within 14 calendar days of U.S. EPA's disapproval.

12. Respondent has designated Mark Krippel as its Project Coordinator. Mr. Krippel shall be responsible for the administration of all of Respondent's actions required by the Order. If Respondent decides to designate a different or an additional Project Coordinator, U.S. EPA retains the right to disapprove of any such Project Coordinator named by Respondent. If U.S. EPA disapproves a selected Project Coordinator, Respondent shall designate a different Project Coordinator within 14 days following U.S. EPA's disapproval and shall notify U.S. EPA of that person's name and qualifications within 14 days of U.S. EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from U.S. EPA relating to this Order shall constitute receipt by the Respondent.

13. U.S. EPA has designated James Mitchell of the Superfund Division, Emergency Response Branch, Region 5, as its On-Scene Coordinator ("OSC"). Respondent shall direct all

submissions required by this Order to the OSC along with the required copies in accordance with Section XXVI (Submittals/Correspondence). Respondent is encouraged to make its submissions to U.S. EPA on recycled paper (which includes significant post-consumer waste paper content where possible) and using two-sided copies.

14. U.S. EPA and Respondent, subject to Paragraph 12, shall have the right to change their designated OSC or Project Coordinator. U.S. EPA shall notify Respondent, and Respondent shall notify U.S. EPA, as early as possible before such a change is made, but in no case less than 24 hours before such a change. The initial notification may be made orally but it shall be promptly followed by a written notice within 4 days of oral notification.

VIII. WORK TO BE PERFORMED

15. Respondent shall perform, at a minimum, all actions necessary to implement the Work Plan attached to this Order as Appendix D. The actions to be implemented generally include, but are not limited to, the following:

- a. Implementing the site-wide health and safety plan contained in the Work Plan;
- b. Removing soils and other on-site overburden materials and verifying their suitability for reuse as backfill;
- c. Excavating contaminated materials from areas within the STP Upland OU (including soil beneath the outfall sewer and in the areas of the discharge point headwalls of both the outfall sewer and the storm water sewer) until verification points are achieved, in accordance with the Work Plan;
- d. Minimizing the potential health hazards to workers performing the removal action and to nearby residents during the removal action;
- e. Performing air monitoring pursuant to the Work Plan to ensure the health and safety of the workers and the general public;
- f. Backfilling the excavations with clean soil or other suitable on-site overburden and restoring excavated areas to their original condition or to such other condition as may be arranged with the property owner(s);
- g. After excavation, transporting all contaminated materials to the REF for further processing and segregation in accordance with REF's IEMA license. The material will be processed through Kerr-McGee's Simplified Physical Separation Facility ("SPSF"). The SPSF separates the byproduct material from material suitable for use as backfill; and

- h. Shipping byproduct material from the REF to a disposal facility licensed to accept and dispose of 11(e)(2) byproduct material.

16. Quality Assurance and Sampling.

a. Prior to the Effective Date of this Order, Respondent undertook significant characterization work at the STP Upland OU. By letter dated July 15, 2003, Respondent submitted, for U.S. EPA approval, a document that identified how Respondent had complied with and would continue to comply with U.S. EPA guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. In its July 15, 2003 document, Respondent also identified the procedures that it intended to comply with after July 15, 2003, to ensuring that all sampling, characterization, and verification work after that date conforms to U.S. EPA guidance.

b. By letter dated August 26, 2003, U.S. EPA determined that Respondent's past characterization work had conformed to U.S. EPA guidance regarding sampling, QA/QC, data validation, and chain of custody procedures. U.S. EPA also approved the procedures that Respondent indicated it would comply with after July 15, 2003, to ensure that such procedures continued to conform to applicable U.S. EPA guidance.

c. Upon request by U.S. EPA, Respondent shall allow U.S. EPA or its authorized representatives to take split and/or duplicate samples. Respondent shall notify U.S. EPA in accordance with the Work Plan. U.S. EPA shall have the right to take any additional samples that U.S. EPA deems necessary. Upon request, U.S. EPA shall allow Respondent to take split or duplicate samples of any samples it takes as part of its oversight of Respondent's implementation of the Work.

17. Reporting.

a. Respondent shall submit monthly written progress reports to U.S. EPA, IEPA, and IEMA/DNS concerning actions undertaken pursuant to this Order beginning 30 days after the Effective Date of this Order, and continuing until the date of U.S. EPA's notice of completion of work pursuant to Section XXV, unless otherwise directed in writing by the OSC. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of actions to be performed, anticipated problems, and planned resolutions of past or anticipated problems.

b. Respondent shall submit two copies to U.S. EPA and one copy each to IEPA and IEMA/DNS of all plans, reports or other submissions required by this Order or the approved Work Plan. Upon request by U.S. EPA, Respondent shall submit such documents in electronic form.

18. Final Report. Within 60 days after completion of all Work required by this Order, Respondent shall submit for U.S. EPA review and approval a final report summarizing the actions taken to comply with this Order. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports." The final report shall include a good faith estimate of total costs or a statement of actual costs incurred in complying with the Order, a listing of quantities and types of materials removed off-Site or handled on-Site, a listing of the ultimate destination(s) of those materials, a presentation of the analytical results of all sampling and analyses performed, and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits). The final report shall also include the following certification signed by a person who supervised or directed the preparation of that report:

"Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

19. Off-Site Shipments.

a. Radioactive Waste Materials. Respondent has advised U.S. EPA that it intends to transport radioactive Waste Material from the STP Upland OU to the REF for processing through the REF's Physical Separation Facility. At the REF, Respondent will consolidate radioactive Waste Material and temporarily store it until transhipped by railroad to Envirocare of Utah, Inc. ("Envirocare"), a disposal facility in Clive, Utah licensed to accept radioactive Waste Material from the Site. Prior to the initial shipment of radioactive Waste Material originating from the STP Upland OU, Respondent shall provide written notification of such shipment to the appropriate Utah state environmental official and to the OSC. Respondent shall include in the written notification the following information: 1) the name and location of the facility to which the Waste Material is to be shipped; 2) the type and quantity of the Waste Material to be shipped; 3) the expected schedule for the shipment of the Waste Material; and 4) the method of transportation. Respondent shall notify Utah of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state. This notification requirement shall apply to the first off-Site shipment where the total volume equals or exceeds 10 cubic yards.

b. If an additional facility(ies) for the disposal of radioactive Waste Material from the STP Upland OU become(s) licensed to receive such material prior to Respondent's disposal of all of the radioactive Waste Material from the STP Upland OU, and if Respondent elects to utilize such other facility(ies), Respondent shall obtain U.S. EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent shall send hazardous substances, pollutants, or contaminants from the STP Upland OU only to an off-site facility that complies with the requirements of the statutory provision and regulation cited in the

preceding sentence. If Respondent is able, and elects, to use a disposal facility different from Envirocare, Respondent shall comply with the terms and conditions of the notification requirements of Paragraph 19.a for each such other disposal facility that Respondent utilizes.

IX. SITE ACCESS

20. Because Respondent owns the REF, Respondent shall, commencing on the Effective Date, provide U.S. EPA, the State, and their representatives, including contractors, with access at all reasonable times to the REF for the purpose of conducting any activity related to this Order.

21. Respondent has advised U.S. EPA that the owners of the property where Work will or may have to be performed (the City of West Chicago and/or DuPage County and/or the DuPage County Forest Preserve District) will provide access for all of the Work to be performed under this Order. If such access is not readily provided, or if the Work under this Order requires access to property in addition to that under the control of these property owners, Respondent shall use its best efforts to obtain all necessary access agreements within 30 days after the Effective Date, or as otherwise specified in writing by the OSC. Respondent shall immediately notify U.S. EPA if after using its best efforts it is unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Respondent shall describe in writing its efforts to obtain access. U.S. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as U.S. EPA deems appropriate. Respondent shall reimburse U.S. EPA for all costs and attorney's fees incurred by the United States in obtaining such access.

22. Notwithstanding any provision of this Order, U.S. EPA and the State retain all of their access authorities and rights, as well as all of their rights to require land use restrictions, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

X. ACCESS TO INFORMATION

23. Respondent shall provide to U.S. EPA and the State, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to activities at the STP Site or to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to U.S. EPA and the State, for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

24. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to U.S. EPA and the State under this Order to the extent

permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by U.S. EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to U.S. EPA and the State, or if U.S. EPA has notified Respondent that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondent.

25. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondent asserts such a privilege in lieu of providing documents, it shall provide U.S. EPA and the State with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

26. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the STP Site.

XI. RECORD RETENTION

27. Until 10 years after Respondent's receipt of U.S. EPA's notification pursuant to Section XXV (Notice of Completion of Work), Respondent shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the STP Upland OU, regardless of any corporate retention policy to the contrary. Until 10 years after Respondent's receipt of U.S. EPA's notification pursuant to Section XXV (Notice of Completion of Work), Respondent shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

28. At the conclusion of this document retention period, Respondent shall notify U.S. EPA and the State at least 90 days prior to the destruction of any such records or documents, and, upon request by U.S. EPA or the State, Respondent shall deliver any such records or documents to U.S. EPA or the State. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege, it shall provide U.S. EPA or the State with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document,

record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

29. Respondent hereby certifies that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the STP Site since notification of potential liability by U.S. EPA or the State regarding the STP Site and that it has fully complied with any and all U.S. EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XII. COMPLIANCE WITH OTHER LAWS

30. Respondent shall perform all actions required pursuant to this Order in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all on-Site actions required pursuant to this Order shall, to the extent practicable, as determined by U.S. EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements ("ARARs") under federal environmental or state environmental or facility siting laws.

XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

31. If any incident, or change in conditions at the STP Site, during the activities conducted pursuant to this Order causes or threatens to cause an additional release of hazardous substances from the STP Site or an endangerment to the public health, welfare, or the environment, Respondent shall immediately take all appropriate action to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the OSC or, in the event of his unavailability, shall notify the Regional Duty Officer, Emergency Response Branch, Region 5 at (312) 353-2318, of the incident or STP Site conditions. In the event that Respondent fails to take appropriate response action as required by this Paragraph, and U.S. EPA takes such action instead, Respondent shall reimburse U.S. EPA all costs of the response action not inconsistent with the NCP.

32. Respondent shall submit a written report to U.S. EPA within 10 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. Respondent shall also comply with any other notification requirements, including those in CERCLA Section 103, 42 U.S.C. § 9603, and Section 304 of the Emergency Planning and Community Right-To-Know Act, 42 U.S.C. § 11004.

33. In addition, in the event of any release from the STP Site of a hazardous substance at or above the reportable quantity, Respondent shall immediately notify the OSC at (312) 353-2318 and the National Response Center at (800) 424-8802. Respondent shall submit a written report to U.S. EPA within 7 days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

XIV. AUTHORITY OF ON-SCENE COORDINATOR

34. The OSC shall be responsible for overseeing Respondent's implementation of this Order. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any Work required by this Order, or to direct any other removal action undertaken at the STP Site. Absence of the OSC from the STP Site shall not be cause for stoppage of Work unless specifically directed by the OSC.

XV. DISPUTE RESOLUTION

35. Unless otherwise expressly provided for in this Order, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Order. The Parties shall attempt to resolve any disagreements concerning this Order expeditiously and informally.

36. If Respondent objects to any U.S. EPA action taken pursuant to this Order, it shall notify U.S. EPA in writing of its objection(s) within 14 days of such action, unless the objection(s) has/have been resolved informally. U.S. EPA and Respondent shall have 45 days from U.S. EPA's receipt of Respondent's written objection(s) to resolve the dispute through formal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of U.S. EPA.

37. Any agreement reached by the parties pursuant to this Section shall be in writing and shall, upon signature by both parties, be incorporated into and become an enforceable part of this Order. If the Parties are unable to reach an agreement within the Negotiation Period, the Director of the Superfund Division, U.S. EPA Region 5, will issue a written decision on the dispute to Respondent. U.S. EPA's decision shall be incorporated into and become an enforceable part of this Order. Respondent's obligations under this Order shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with U.S. EPA's decision, whichever occurs.

XVI. FORCE MAJEURE

38. Respondent agrees to perform all requirements of this Order within the time limits established under this Order, unless the performance is delayed by a *force majeure*. For purposes of this Order, a *force majeure* is defined as any event arising from causes beyond the control of Respondent, or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, which delays or prevents performance of any obligation under this Order despite Respondent's best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work, increased cost of performance, or normal weather events.

39. If any event occurs or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a *force majeure* event, Respondent shall notify U.S. EPA orally within 5 days of when Respondent first knew that the event might cause a delay. Within 30 days thereafter, Respondent shall provide to U.S. EPA in writing an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; Respondent's rationale for attributing such delay to a *force majeure* event if it intends to assert such a claim; and a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of *force majeure* for that event for the period of time of such failure to comply and for any additional delay caused by such failure.

40. If U.S. EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Order that are affected by the *force majeure* event will be extended by U.S. EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If U.S. EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, U.S. EPA will notify Respondent in writing of its decision. If U.S. EPA agrees that the delay is attributable to a *force majeure* event, U.S. EPA will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XVII. STIPULATED PENALTIES

41. Respondent shall be liable to U.S. EPA for stipulated penalties in the amounts set forth in Paragraphs 42 and 43 for failure to comply with the requirements of this Order specified below, unless excused under Section XVI (*Force Majeure*), or unless EPA elects, pursuant to Paragraph 45, not to demand penalties. "Compliance" by Respondent shall include completion of the activities under this Order, the Work Plan, or other plans or documents approved under this Order identified below in accordance with all applicable requirements of law, this Order, the

Work Plan and any plans or other documents approved by U.S. EPA pursuant to this Order and within the specified time schedules established by and approved under this Order.

42. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 42(b):

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 350	1st through 14th day
\$ 1,000	15th through 30th day
\$ 1,500	31st day and beyond

b. Compliance Milestones

<u>Milestone</u>	<u>Schedule</u>
(1) Completing all excavation required by the Work Plan to the pre-determined verification points	July 1, 2004
(2) Completing all restoration activities required by the Work Plan	September 1, 2004

43. Stipulated Penalty Amounts - Reports. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports or other written submissions pursuant to Paragraphs 17, 18, 19, 32:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$ 250	1st through 14th day
\$ 400	15th through 30th day
\$ 550	31st day and beyond

44. Upon receipt of written demand by U.S. EPA, Respondent shall make payment to U.S. EPA within 20 days and interest shall accrue on late payments. Respondent shall remit a cashier's or certified check for the amount of the penalty made payable to the "Hazardous Substance Superfund," to the following address:

U.S. Environmental Protection Agency
Superfund Accounting

P.O. Box 70753
Chicago, Illinois 60673

Respondent shall simultaneously transmit a copy of the check to the Director, Superfund Division, U.S. EPA Region 5, 77 West Jackson Blvd., Chicago, Illinois, 60604-3590. Payments shall be designated as "STP Upland OU" and shall reference the Respondent's name and address, the U.S. EPA site identification number 05QW, and the docket number of this Order. In the event that any payment is not made within the deadlines described above, Respondent shall pay interest on the unpaid balance. Interest is established at the rate specified in Section 107(a) of CERCLA, 42 U.S.C. § 9607(a). The interest shall begin to accrue on the date of Respondent's receipt of the bill. Interest shall accrue at the rate specified through the date of the payment. Payments of interest made under this paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section.

45. Even if violations are simultaneous, separate penalties shall accrue for separate violations of this Order. Penalties accrue and are assessed per violation per day. Penalties shall accrue regardless of whether U.S. EPA has notified Respondent of a violation or act of noncompliance. The payment of penalties shall not alter in any way Respondent's obligation(s) to complete the performance of the Work required under this Order. Stipulated penalties shall accrue, but need not be paid, during any dispute resolution period concerning the particular penalties at issue. If Respondent prevails upon resolution, Respondent shall pay only such penalties as the resolution requires. In its unreviewable discretion, U.S. EPA may waive its rights to demand all or a portion of the stipulated penalties due under this Section.

46. The stipulated penalties set forth above shall not be the sole or exclusive remedy for violations of this Order and shall not preclude U.S. EPA from pursuing any other remedy or sanctions which are available to the agencies because of the Respondent's failure to comply with this Consent Order. Should Respondent violate this Order or any portion hereof, U.S. EPA may carry out all or part of the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. §§ 9604. Payment of stipulated penalties does not alter Respondent's obligation to complete performance under this Consent Order.

XVIII. COVENANT NOT TO SUE BY U.S. EPA

47. In consideration of the actions that will be performed by Respondent under the terms of this Order, and except as otherwise specifically provided in this Order, U.S. EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for performance of the Work at the STP Upland OU. This covenant not to sue shall take effect upon the Effective Date of this Order and is conditioned upon the complete and satisfactory performance by Respondent of its obligations under this Order. This covenant not to sue extends only to Respondent and does not extend to any other person.

XIX. RESERVATIONS OF RIGHTS BY U.S. EPA

48. Except as specifically provided in this Order, nothing herein shall limit the power and authority of U.S. EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the STP Site. Further, nothing herein shall prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Order, from taking other legal or equitable action as it deems appropriate and necessary, or from requiring Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

49. The covenant not to sue set forth in Section XVIII above does not pertain to any matters other than those expressly identified therein. U.S. EPA reserves, and this Order is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

- a. claims based on a failure by Respondent to meet a requirement of this Order;
- b. liability for any costs of the United States incurred at, in connection with, or in the vicinity of the STP Site or any of the other Kerr-McGee West Chicago NPL Sites;
- c. liability for performance of response action other than the Work at the STP Upland OU;
- d. criminal liability;
- e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the STP Upland OU; and
- g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the STP Site.

50. Work Takeover. In the event U.S. EPA determines that Respondent has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner which may cause an endangerment to human health or the environment, U.S. EPA may assume the performance of all or any portion of the Work as U.S. EPA determines necessary. Respondent may invoke the procedures set forth in Section XV (Dispute Resolution) to dispute U.S. EPA's determination that takeover of the Work is warranted under this Paragraph. Respondent shall be liable for all costs incurred by the United States in performing the Work pursuant to this Paragraph. Notwithstanding

any other provision of this Order, U.S. EPA retains all authority and reserves all rights to take any and all response actions authorized by law.

XX. COVENANT NOT TO SUE BY RESPONDENT

51. Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work or this Order, including, but not limited to:

- a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;
- b. any claim arising out of response actions at or in connection with the STP Site, including any claim under the United States Constitution, the State Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or
- c. any claim against the United States pursuant to Sections 107 and 113 of CERCLA, 42 U.S.C. §§ 9607 and 9613, relating to the STP Site.

Except as provided in Paragraph 53 (Waiver of Claims), these covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 49(b), (c), and (e) - (g), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation.

52. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

53. Respondent agrees not to assert any claims and to waive all claims or causes of action that it may have for all matters relating to the STP Upland OU, including for contribution, against any person where the person's liability to Respondent with respect to the STP Upland OU is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the STP Upland OU, or having accepted for transport for disposal or treatment of hazardous substances at the STP Upland OU, if

- a. any materials contributed by such person to the STP Upland OU constituting Municipal Solid Waste ("MSW") or Municipal Sewage Sludge ("MSS") did not exceed 0.2% of the total volume of waste at the STP Upland OU; and
- b. any materials contributed by such person to the STP Upland OU containing hazardous substances, but not constituting MSW or MSS, did not exceed the greater of i) 0.002% of the total volume of waste at the STP Site, or ii) 110 gallons of liquid materials or 200 pounds of solid materials.

This waiver shall not apply to any claim or cause of action against any person meeting the above criteria if U.S. EPA has determined that the materials contributed to the STP Upland OU by such person contributed or could contribute significantly to the costs of response at the STP Upland OU. This waiver also shall not apply with respect to any defense, claim, or cause of action that Respondent may have against any person if such person asserts a claim or cause of action relating to the STP Upland OU against Respondent.

XXI. OTHER CLAIMS

54. By issuance of this Order, the United States and U.S. EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or U.S. EPA shall not be deemed a party to any contract entered into by Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Order.

55. Except as expressly provided in Section XX (Covenant Not To Sue by Respondent) and Section XVIII (Covenant Not to Sue by U.S. EPA), nothing in this Order constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a

party to this Order, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

56. No action or decision by U.S. EPA pursuant to this Order shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXII. CONTRIBUTION PROTECTION

57. The Parties agree that Respondent is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for "matters addressed" in this Order. The "matters addressed" in this Order are the Work. Matters addressed in this Order do not include payment or compromise of the costs the United States incurred at, in connection with, or in the vicinity of the STP Site or any of the other Kerr-McGee West Chicago NPL Sites. Except as provided in Section XX, Paragraph 53 of this Order (Waiver of Claims), nothing in this Order precludes the United States or Respondent from asserting any claims, causes of action, or demands against any persons not parties to this Order for indemnification, contribution, or cost recovery.

XXIII. INDEMNIFICATION

58. Respondent shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Order. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Order. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Order. Neither Respondent nor any such contractor shall be considered an agent of the United States.

59. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.

60. Respondent waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the STP Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the

United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Respondent and any person for performance of Work on or relating to the STP Site, including, but not limited to, claims on account of construction delays.

XXIV. MODIFICATIONS

61. The OSC may make modifications, in writing, to the Work Plan if necessary to achieve the objectives of the Work Plan, and may modify the Work Plan schedule to extend deadlines, subject to Respondent's rights to dispute all modifications under Section XV (Dispute Resolution). Any other requirements of this Order may be modified in writing by mutual agreement of the parties.

62. If Respondent seeks permission to deviate from the Work Plan or schedule, Respondent's Project Coordinator shall submit a written request to U.S. EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving written approval from the OSC pursuant to Paragraph 61.

63. No informal advice, guidance, suggestion, or comment by the OSC or other U.S. EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain any formal approval required by this Order, or to comply with all requirements of this Order, unless it is formally modified.

XXV. NOTICE OF COMPLETION OF WORK

64. When U.S. EPA determines, after U.S. EPA's review of the Final Report, that all Work has been fully performed in accordance with this Order, with the exception of any continuing obligations required by this Order, U.S. EPA will provide written notice to Respondent. If U.S. EPA determines that any such Work has not been completed in accordance with this Order, U.S. EPA will notify Respondent, provide a list of the deficiencies, and require, subject to Respondent's rights under Section XV (Dispute Resolution), that Respondent undertake the additional Work and modify the Final Report if appropriate in order to correct such deficiencies. Respondent shall submit a modified Final Report in accordance with the U.S. EPA notice, unless Respondent has invoked the dispute resolution procedures of this Order and the results of that process do not require Respondent to do so.

XXVI. SUBMITTALS/CORRESPONDENCE

65. Any notices, documents, information, reports, plans, approvals, disapprovals, or other correspondence required to be submitted from one party to another under this Order, shall be deemed submitted either when hand-delivered or as of the date of receipt by certified mail/return receipt requested, express mail, or facsimile in accordance with this Section. Correspondence and communications from U.S. EPA, IEPA, and IEMA/DNS shall be addressed to:

Harold Holmberg
Kerr-McGee Chemical LLC
Kerr-McGee Center
P.O. Box 25861
Oklahoma City, OK 73125
Phone: 405 270-3820
Fax: 405 270-3123
Email: cmg.com

Mark Krippel
Kerr-McGee Chemical LLC
800 Weyrauch St.
West Chicago, IL 60185
Phone: 630 293-6331
Fax: 630 231-3990
Email: ig.com

Tom Goresen
Kerr-McGee Chemical LLC
123 Robert S. Kerr Ave.
Oklahoma City, OK 73102
Phone: 405 270-2857
Fax: 405 270-4101
Email: ig.com

J.T. Smith II
Covington & Burling
1201 Pennsylvania Ave., NW
Washington, DC 20004-2401
Phone: 202 622-5555
Fax: 202 622-6291
Email: iv.com

All correspondence, communication, and submittals from Respondent shall be directed to the following individuals and additional individuals they identify:

James Mitchell
On-Scene Coordinator
United States Environmental Protection Agency
77 West Jackson Blvd., Mailcode SR-5J
Chicago, Illinois 60604-3590
Phone (312) 353-9537
FAX (312) 353-9176
Email: jmitchell@epa.gov

and

Thomas Williams
Illinois Environmental Protection Agency
1021 North Grand Avenue East
Springfield, Illinois 62702
Phone (217) 782-1322
FAX (217) 524-6417
Email: twilliams@state.il.us

and

Richard Allen
Illinois Emergency Management Agency, Division of Nuclear Safety
1035 Outer Park Dr.
Springfield, IL 62704
Phone (217) 782-1322
Fax (217) 524-6417
Email: ralen@state.il.us

With copies to:

Mary Fulghum
Associate Regional Counsel
U.S. EPA - Region 5
77 West Jackson Boulevard, C-14J
Chicago, Illinois 60604-3590
Phone (312) 886-4683
FAX (312) 886-0747
Email: mary.fulghum@epa.gov

And

Gerald Karr
Illinois Attorney General's Office
188 W. Randolph St., 20th Floor
Chicago, IL 60601
Phone (312) 814-3369
Fax (312) 814-2347
Email: _____@il.us

XXVII. SEVERABILITY/INTEGRATION/APPENDICES

66. If a court issues an order that invalidates any provision of this Order or finds that Respondent has sufficient cause not to comply with one or more provisions of this Order, Respondent shall remain bound to comply with all provisions of this Order not invalidated or determined to be subject to a sufficient cause defense by the court's order.

67. This Order and its appendices constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Order. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Order. The following appendices are attached to and incorporated into this Order: Appendix A (Action Memorandum); Appendix B (STP Site Map); Appendix C (STP Upland OU); Appendix D (Work Plan).

XXVIII. EFFECTIVE DATE

68. This Order shall be effective upon signature by the Director, Superfund Division, U.S. EPA Region 5.

XXIX. SIGNATORIES

69. Each undersigned representative of a signatory to this Administrative Order on Consent certifies that he or she is fully authorized to enter into the terms and conditions of this Order and to bind such signatory, its directors, officers, employees, agents, successors and assigns, to this document.

Agreed this _____ day of _____, 2003.
Kerr-McGee Chemical, LLC

By: _____

Typed Name: George D. Christiansen

Title: Vice President

Address: P.O. Box 25861

Oklahoma City, OK 73125

IT IS SO ORDERED AND AGREED
United States Environmental Protection Agency

By: _____
William E. Muno, Director
Superfund Division United States
Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

DATE: _____

XXIX. SIGNATORIES

69. Each undersigned representative of a signatory to this Administrative Order on Consent certifies that he or she is fully authorized to enter into the terms and conditions of this Order and to bind such signatory, its directors, officers, employees, agents, successors and assigns, to this document.

Agreed this _____ day of _____, 2003.
Kerr-McGee Chemical, LLC

By: _____

Typed Name: _____

Title: _____

Address: _____

IT IS SO ORDERED AND AGREED
United States Environmental Protection Agency

By: _____
William E. Muno, Director
Superfund Division United States
Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

DATE: 10/16/03

Appendix A
Action Memorandum



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF

DATE: OCT 07 2003

SUBJECT: **ACTION MEMORANDUM** - Request for a Time Critical Removal Action at the Kerr-McGee Sewage Treatment Plant Site, West Chicago, DuPage County, Illinois.

FROM: James Mitchell, On-Scene Coordinator
Emergency Response Branch - Section 3

TO: William E. Muno, Director
Superfund Division

THRU: Rick Karl, Chief
Emergency Response Branch

I. PURPOSE

The purpose of this Action Memorandum (or "Action Memo") is to document the determination of an imminent and substantial threat to public health or welfare or the environment posed by the presence of contaminated soils at the Kerr-McGee Sewage Treatment Plant Site, DuPage County, Illinois, and to document approval of the proposed time-critical removal action described herein.

The proposed removal action seeks to mitigate the imminent and substantial threat to human health and the environment posed by the presence of uncontrolled hazardous substances at the Kerr-McGee Sewage Treatment Plant Upland Operable Unit ("STP Upland OU") which is part of the larger Kerr-McGee Sewage Treatment Plant National Priorities List ("NPL") Site. The Sewage Treatment Plant (STP) NPL site includes the STP Upland Operable Unit and the West Branch DuPage River from the northern boundary of the Sewage Treatment Plant to confluence the rivers with Kress Creek. From approximately 1932 through 1973, the Rare Earths Facility (REF) located in West Chicago, DuPage County, Illinois conducted thorium and rare earth processing that created mill tailings and/or byproduct material and other process metals waste that contained radionuclides. The West Chicago STP received different types of landfill wastes from a variety of different sources throughout this time period including mill tailings and process wastes from the REF.

This removal action will address contamination at the STP Upland OU. Contamination along the West Branch DuPage River (WBDR) to its confluence with Kress Creek will be addressed as part of the Kerr-McGee Kress Creek/WBDR Remedial Action. Attachment 1 is a map with a black line of dashes that represents the boundary between the STP Upland OU Removal Action and the Kress Creek/WBDR Remedial Action.

The removal action involves: 1) excavating soils contaminated with byproduct material to predetermined verification points, 2) backfilling and restoring the excavated areas, 3) segregating overburden material from byproduct material, 4) disposing of soils and other materials containing byproduct material and 5) restoring areas disturbed by work, including outfall sewer, National Pollutant Discharge Effluent System (NPDES) discharge point headwall, storm sewer discharge point headwall and asphalt road and lawn areas.

The removal action is expected to be conducted by Kerr-McGee Chemical, LLC, a potentially responsible party ("PRP").

II. SITE CONDITIONS AND BACKGROUND

Kerr-McGee Sewage Treatment Plant Site: CERCLIS ID #ILD980824031

This is a time-critical removal action.

A. Physical Location and Description

The Kerr-McGee STP NPL Site is in the City of West Chicago, DuPage County, Illinois on the West Bank of the West Branch DuPage River. The location of the Sewage Treatment Plant (STP) lies in the southeast corner of the West Chicago corporate limits, near the intersection of Illinois Highway 59 and Highway 38 (Roosevelt Road). The STP Upland OU occupies an area of roughly 25 acres, most of which is committed to the STP facilities. The eastern half of the northern rectangular area of the property is active. The southern triangle of the property was a large settling lagoon constructed before 1967.

In Illinois, the low-income percentage is 27% and the minority percentage is 25%. To meet the Environmental Justice (EJ) concern criteria, the area within 1 mile of the Site must have a population that is twice the state low-income percentage and/or twice the state minority percentage. That is, the area must be at least 54% low-income and/or 50% minority. At this Site, the low-income percentage is 27% and the minority percentage is 25% as determined by Arcview or Landview III EJ analysis. Therefore, this Site does not meet the Region's EJ criteria based on demographics as identified in the "Region 5 Interim Guidelines for Identifying and Addressing a Potential EJ Case, June 1998." Attachment 3 is the EJ analysis.

B. Site Background

The STP Site is one of four Kerr-McGee NPL sites in the West Chicago area. The other three NPL sites, the Residential Areas, Kress Creek and Reed-Keppler Park, are not addressed by this action. The REF, which is the source of the contamination at all four NPL sites, is not listed on the NPL, but is undergoing cleanup, closure and decommissioning activities under the regulatory authority of the Illinois Emergency Management Agency, Division of Nuclear Safety (IEMA/DNS) formerly the Illinois Department of Nuclear Safety (IDNS).

From approximately 1932 to 1973, the facility that is now known as the REF was operated by three different companies to extract thorium and other elements from various ores. The facility began operation in 1932, when the Lindsay Light and Chemical Company began producing thorium and other rare earth materials. In 1958,

the Lindsay Light and Chemical Company merged into the American Potash & Chemical Company, and in 1967, the Kerr-McGee Chemical Corporation ("Kerr-McGee") acquired the facility. Kerr-McGee maintained operations at the facility until its closure in 1973. When it was operating, the facility reportedly was the largest producer of rare earth and thorium compounds in the world.

Production of thorium, a radioactive material, yielded radioactive mill tailings primarily containing thorium and residual levels of radium and some uranium. These tailings were stockpiled at the REF, and for several decades, before the health risks associated with thorium mill tailings were recognized, were available for use as fill material at residential and other properties throughout the area. The West Chicago STP received different types of landfill wastes from a variety of sources throughout its operational period including debris and wastes from the REF.

In 1954, thorium production became subject to federal regulation with the passage of the Atomic Energy Act, implemented by the U.S. Atomic Energy Commission ("AEC"). A license to operate the REF was granted in 1956 to Lindsay Light and Chemical Company and subsequently transferred with REF ownership to Kerr-McGee via its acquisition of American Potash in 1967. In 1974, under the Energy Reorganization Act, the AEC was abolished and its licensing and regulatory authority was transferred to the U.S. Nuclear Regulatory Commission ("NRC"). The State of Illinois petitioned NRC for amendment of the agreement-state licensing program to include licensing control of REF material (categorized as 11(e)(2) byproduct material as defined by the Atomic Energy Act), and IDNS was granted licensing authority on November 1, 1990.

Argonne National Laboratory (ANL) conducted, for the NRC, the initial base-line study to identify and briefly characterize contaminated properties outside the REF. This study was conducted from March 1976 to May 1978 by Frigerio et al., and identified 77 thorium-processing waste deposits in the area (the main body of the report identified 75 areas, and an appendix identified an additional 2 areas); the locations included Reed-Keppler Park, the Sewage Treatment Plant, and Kress Creek, but also properties located to the east of the REF and other locations outside of the City limits. Techniques used to delineate the contaminated areas included an Aerial Radiological Monitoring Survey ("ARMS") flyover in 1977, a street-by-street instrumented vehicle survey, an external gamma exposure rate survey, soil contamination measurements using subsurface sampling, and a radiological walkover survey along the waterways and banks of Kress Creek and parts of the West Branch of the DuPage River.

Visual inspection of the STP site and a sequence of aerial photos dating back to 1939 indicate periodic landfill activities on the property. The facility was in existence in 1939 and included eight sludge disposal ponds located near the river. No visible indications of dumping or landfilling of wastes were apparent in the 1939 photographs. The next available aerial photograph, from 1954, indicated that materials had been deposited on the bank of the river adjoining the STP. Material had also been placed over four of the eight sludge ponds. The two deposits appear to overlap in some areas. The other four sludge disposal ponds were no longer in use in 1954.

By 1961 there had been additions to the STP facilities. There was renewed solid waste disposal to the west of the plant and the area had been enclosed by a fence. By October 1967, a large settling pond that covered the southern triangular area of the site was in place. There were also five smaller ponds east of the plant, between the actual plant and the river. These ponds appear to be in the area of the four former sludge

disposal ponds that had not been covered with solid material. A 1974 photograph indicates that one of the smaller ponds was drained and that there may be several areas of solid waste disposal in the northeast section of the property.

Radioactive ore, tailings and process wastes from the REF were used to fill a decommissioned sludge holding tank, to contour grounds, and mix with landfill wastes. These wastes appear to have been placed in the eastern half of the northern rectangular areas of the site. In addition to the fillings in areas on the STP, byproduct material was used as fill for about 320 feet along the bank of the river. Contaminated material may have eroded into the river.

In the late 1980s, the City expanded the sewage treatment plant. Radioactive wastes within the construction area were temporarily stored in an old lagoon in the eastern part of the site. While the site was being evaluated for proposal to the NPL, Kerr-McGee and the City entered into a consent decree in September 1985. Pursuant to this consent decree, thorium-bearing materials, including unexcavated wastes and wastes in the storage lagoon, with radiation exposure rates greater than 30-micro-roentgens per hour measured at 1 meter from any surface were removed from the STP and returned to the REF. An exception to the 30-micro-roentgens per hour was agreed to for material underneath the main outfall pipe, which could not be accessed without interference with STP operations. Kerr-McGee completed the excavation and removal of material in the fall of 1987.

In October 1984, EPA had proposed four sites in the West Chicago area for placement on the NPL, including the Kerr-McGee STP Site. The STP site was added to the NPL on August 30, 1990.

According to a letter dated June 20, 2003, from Mr. Michael Fortner, Mayor of West Chicago and a letter dated August 4, 2003, from Mr. Robert E. Flatter, Director of Public Works, the City has plans to expand the STP to meet the needs of the developing community and the property will be continued to be used as a wastewater treatment plant indefinitely into the future.

C. Previous Studies and Removal Actions

The following chronological summary identifies the most notable investigations, responses, and other activities in association with the STP Investigations. Some studies are explicit to the STP while others are tangentially related to the site as it represents part of the dispersion of REF contaminated materials throughout West Chicago.

- The 1978 ANL study by Frigerio et al., identified 75 thorium-processing waste deposits within the Reed Keppler Park and the area adjacent to Kress Creek, and on properties east of the REF. Fourteen sites identified were outside the City limits. Techniques to delineate contaminated areas included an aerial radiological monitoring survey (ARMS) flyover in 1977, a street-by-street vehicle survey, an external gamma exposure rate survey, and soil contamination measurements using subsurface sampling.
- "An Aerial Radiological Survey of West Chicago, Illinois" (NUREG-1183-17300, prepared by EG&G for the NRC (September 1977). EG&G Aerial Measurements conducted an aerial radiological survey of the West Chicago area for the NRC.

This survey identified a number of elevated gamma radiation levels in a number of residential properties. Subsequent to surveys conducted by the NRC and the City, Kerr-McGee conducted radiation surveys throughout the City and identified 117 properties with radiation exposure rates greater than 30 micro-roentgens per hour at 1 meter from the surface.

- "Hydrologic Studies West Chicago Thorium Plant," prepared by Law Engineering Testing Company for Kerr-McGee Corporation (August 1981). Data included in this report were derived from 13 onsite borings as well as from offsite water wells located within a 1.5 mile radius originating at the REF. To obtain groundwater data, all onsite borings were completed as well. Parameters measured included static water levels, transmissivity, hydraulic conductivity, formation and well loss coefficients, and groundwater velocity. The data tables provided in the report include DuPage County and REF site groundwater quality, hydraulic data for shallow wells, permeability test results, and equilibrium distribution coefficients.
- "Remedial Investigation Report, Kerr-McGee Radiation Sites, West Chicago, Illinois." U.S. EPA Region 5, WA No. 82-5L94.0 (September 1986). This draft report addressed investigations performed at the four Kerr-McGee Radiation Sites. Data assessment and summary conclusions indicated several routes of potential risk to the public and the environment resulting from exposure to media at the subject sites that had been contaminated with wastes from the REF. These include direct external radiation exposure, inhalation exposure, and ingestion of contaminated soil, groundwater, and surface water.

The report further concluded (1) that the hazardous characteristics of thorium residuals were primarily due to the radioactive constituents and (2) that on the basis of the RI activities and assessments, the potential for release for heavy metals to the groundwater appear to be minimal. With reference to the second point, validation tests using the extraction procedure (EP) toxicity test to determine the leachability of hazardous substances exhibited low potential for significant mobility through soils and subsequent groundwater pollution.

The primary radionuclides present are thorium-232 and uranium-238 and their associated decay products. The principal potential risks to man include external gamma radiation exposure and radiation exposure from inhalation of airborne decay products of thoron (Rn-220) and radon (Rn-222). The REF wastes, which are the original source of contamination, contain concentrations of thorium-232 as high as 4,000 pico-Curies per gram [pCi/g] with uranium-238 concentrations of about one tenth the thorium-232 values. The decay products of thorium-232 and uranium-238 in the wastes are generally in secular equilibrium.

- Second aerial radiological survey by EG&G and Ground Level Verification by IDNS (1989). Following a second aerial radiologic survey conducted by EG&G, ground level verification of EG&G's findings identified several new thorium anomalies. The identification of these sites and Kerr-McGee's petition to the NRC for permanent disposal of the thorium residuals to the factory site focused new attention on the radioactive contamination problem in West Chicago.
- Source Characterization and Hydrologic Assessment (1993). From February through August 1993, CH2M HILL conducted radiologic surveys, conducted

gamma logging of soil borings, installed and sampled monitoring wells for chemical parameters, conducted sediment and surface water sampling, and collected fish tissue samples at the STP site.

- Source Characterization and Hydrologic Assessment Addendum (1994). From August to November 1994, CH2M HILL conducted GPS surveys along the banks of the West Branch DuPage River from the STP to the rivers confluence with Kress Creek. Additional sediment and surface water samples were collected, and the four STP monitoring wells were resampled for thorium and uranium isotopes.
- Kerr-McGee NPL Sites: Mixed Waste Potential (1995). Available Chemical information from the 1993-4 samples collected at the STP were evaluated. Results indicate that although the contaminants were present, they would pose only marginal mixed waste potential.
- Data Quality Evaluation Technical Memorandum: National Air and Radiation Environmental Laboratory (NAREL) Samples from the Kerr-McGee RKP, STP and Kress Creek Sites, West Chicago, Illinois. Contract No. 68-W8-0040/WA 50-5FQT/WA 51-5FQW/WA 62-5LQS (March 1996). Analytical data from three Kerr-McGee sites submitted to NAREL for radiologic quantification are summarized in this document, along with data validation reports.
- Addendum. Data Quality Evaluation Technical Memorandum: NAREL Samples from the Kerr-McGee STP, Sewage Treatment Plant Kress Creek Sites, West Chicago, Illinois. Contract No. 68-W8-0040/WA 51-5FQW/WA 62-5LQS (August 1996). Final data submittals from all radiological sampling performed on the Kerr-McGee sites. Data quality and internal consistency evaluations were included in the package.

D. Other Relevant Actions

Actions being taken to address thorium mill tailings contamination at other Kerr-McGee sites in West Chicago are relevant to this action. Due to the imminent threat posed by the contamination, removal Actions have been completed at the Reed-Keppler Park Site and are nearing completion at the Residential Areas Site. Additionally, Kerr-McGee has been conducting closure activities at the REF as required by the IDNS pursuant to the Illinois Radiation Protection Act.

In August of 1994, EPA finalized an Engineering Evaluation/Cost Analysis ("EE/CA") to support the efforts of a Non-Time Critical Removal Action at the Residential Areas Site. The EE/CA identified potential alternatives for remediating residential properties contaminated with thorium mill tailings. In this document, EPA concluded that there were no proven and effective treatment technologies for radioactively contaminated soils. Since containment was not considered a viable option, the EE/CA evaluated two basic alternatives: 1) No action; and 2) Excavation and permanent disposal. The EE/CA also discusses the application of the As Low As Reasonably Achievable (ALARA) concept as well as compliance with Applicable or Relevant and Appropriate Requirements ("ARARs"). For the two remedies evaluated, the EE/CA also provided a range of estimated costs for each of the alternatives based on various volumes of contamination to be addressed.

E. Proposed Cleanup Criteria

Under Superfund, long-term remedial actions must attain Federal and more stringent State ARARs during and at the completion of the remedial action. Removal actions (such as the type planned for the STP Upland OU) must attain ARARs to the extent practicable. Other relevant actions, policies, or guidance, may also be used as To-Be-Considered ("TBC") criteria when evaluating cleanup decisions. Therefore, EPA relies upon Federal and State ARARs to the extent practicable, as well as, TBC criteria.

There are no established regulatory requirements that are directly applicable to establishing cleanup criteria for this proposed removal action at an operating sewage treatment plant. However, the most significant requirements which are relevant and appropriate, at least in part, to establishing cleanup criteria are those present in Federal and State regulations for uranium and thorium mill processing sites. These regulations are found in 40 CFR 192, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings (UMTRCA) and the associated State regulations of Title 32, Chapter II, Subchapter b, Part 332 of the Illinois Administrative Code, entitled "Licensing Requirements for Source Material Milling Facilities," which were based on the federal standards.

UMTRCA Section 192.12(a)(1) and (a)(2) set levels at 5 picocuries per gram (pCi/g) over background in the top 15 centimeter (cm) layer and at 15 pCi/g over background in successively deeper 15 cm layers, respectively. The 5 pCi/g standard has a health basis for cleanup whereas the 15 pCi/g standard is only a measurement tool for finding large deposits of radioactive contamination. This cleanup criterion relates to the sum of radium-226 and radium-228 concentrations over background. The State standards, Title 32 IAC, Ch. II, Subch b, Part 332 are more stringent than the Federal standards due to a dry weight measurement requirement. This proposed removal action will excavate the mill tailings to predetermined verification points, based upon the UMTRCA and State regulations, and will mitigate risk presented by the thorium and any associated metals at the STP Upland OU.

III. THREATS TO PUBLIC HEALTH, WELFARE, OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

Conditions at the STP Upland OU Site currently exist which, if not addressed by implementing the response action documented in this Action Memorandum, may present an imminent and substantial endangerment to public health or welfare or the environment. The conditions at the STP Upland OU Site meet the criteria for a removal action as set forth in the NCP, Section 300.415(b)(2), specifically:

- i) **Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;**

This factor is present at the STP Upland OU Removal Site because of the existence of thorium mill tailings in the soils at or near the surface at locations identified by radiological surveys that include the existing 48" diameter NPDES outfall sewer pipe and headwall and storm sewer discharge pipe and headwall. The thorium mill tailings contain radionuclides such as thorium, uranium and radium, and heavy metals

such as lead, barium and chromium, all of which are hazardous substances as defined by Section 101(14) of CERCLA. Nearby human populations and animals may be exposed to the hazardous substances by the following routes of exposure:

- A) Direct gamma exposure both inside and outside structures resulting from radioactive decay from contaminated soil outside structures;
- B) Incidental ingestion of contaminated soil;
- C) Inhalation of radon and thoron decay products within enclosed structures (i.e., municipal structures) emanating from contaminated soil beneath or against the foundation of the structure; and

Areas within the STP Upland OU Removal Site contain levels of radionuclides that exceed the cleanup standards for radionuclides described in 40 CFR 192, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings (UMTRCA).

The thorium mill tailings at the STP Upland OU Removal Site emit ionizing radiation. Exposure to ionizing radiation, if at sufficiently high doses and dose rates, can cause carcinogenic, genetic and teratogenic effects. For this Site, the potential for cancer induction in exposed individuals is considered to be the greatest health concern. Ionizing radiation is a demonstrated human and animal carcinogen, based on data that correlates high exposures of radiation to cancer induction. Significant uncertainty exists from extrapolating high-level information to low-level effects. However, current radiation protection standards are based on the idea that each increment of radiation exposure causes a linear increase in the risk of cancer.

In addition to hazards from exposure to radiological emission products, uranium is chemically toxic to the kidneys.

Lead is the most common toxic metal in the environment, and there are many effects from chronic exposure to low levels, ranging from anemia to impairment of the nervous, hematopoietic and cardiovascular systems. The effects of exposure to barium can include paralysis, cardiovascular abnormalities and gastroenteritis. Chronic ingestion of hexavalent chromium can cause kidney damage, while chronic inhalation can cause lung cancer.

(ii) High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;

This factor is present at the STP Upland OU Removal Site due to the existence of thorium mill tailings in surface and near subsurface soils that may migrate due to wind, erosion, deliberate human movement, or migration of radon/thoron gas from soils into municipal structures.

The primary migration mechanism at the STP Upland OU Removal Site

that may lead to the spread are soil transport, sediment transport and deposition within the stream to unaffected reaches, leaching of contaminants of concern from soils and sediments to surface water, and erosion of floodplain soils to the river.

In addition, U.S. EPA received a letter dated June 20, 2003, from Mr. Michael Fortner, Mayor of West Chicago. In this letter Mayor Fortner stated that the City has plans to expand the STP to meet the needs of the developing community. Planning for such a development may include the advancement of structural borings on STP property. Intrusion into thorium mill tailings may cause unnecessary exposure to workers as well as cause airborne migration of contaminated soil. Also, Mr. Robert E. Flatter, Director of Public Works for the City of West Chicago in a letter to U.S. EPA dated August 4, 2003 that explained, in addition to the need to take structural borings to support plant expansion, maintenance or repair of subsurface plant components could also intrude upon contaminated materials which may also lead to movement of or exposure to contaminated materials.

(iii) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

This factor is present at the STP Upland OU Removal Site due to the existence of thorium mill tailings in surface and near subsurface soils that may migrate due to wind and erosion. Such migration may occur if there are contaminated areas without a good vegetative cover or if there are contaminated areas that have been disturbed by human activities.

IV. ENDANGERMENT DETERMINATION

Given the Site conditions, the nature of the confirmed hazardous substances, and the potential exposure pathways described in Sections II and III above, actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. PROPOSED ACTIONS AND ESTIMATED COSTS

The following actions are proposed to mitigate the imminent and substantial endangerment to human health or welfare or the environment that may be posed by contaminated soils at the Site:

- a) Prepare and implement a site-wide health and safety plan.
- b) Remove overburden materials and verify their suitability for reuse as backfill.
- c) In accordance with an approved work plan, excavate contaminated materials from areas within the STP Upland OU Removal Site (including soil beneath the NPDES outfall sewer and storm sewer and their respective discharge point headwalls) until predetermined verification points based upon UMTRCA and State regulations are achieved.

- d) Minimize the potential health hazards to workers performing the removal action and to nearby residents during the removal action.
- e) Backfill the excavations with overburden and restore excavated areas to their original condition or to such other condition as may be arranged with the property owner.
- f) After excavation, transport all contaminated materials to the REF for further processing and segregation in accordance with REF's IDEM license. The material will be processed through the Respondents' Simplified Physical Separation Facility (SPSF). The SPSF separates the byproduct material from material suitable for use as backfill.
- g) Byproduct material will be shipped from the REF to a disposal facility licensed to accept and dispose of 11(e)(2) byproduct material.

EPA anticipates that Kerr-McGee will conduct this removal action, therefore, detailed cost estimates are not required in this Action Memorandum. However, the following cost estimates are provided for informational purposes only.

The costs for the removal action at this Site will be directly dependent on the extent of contamination (volume of excavated material). Kerr-McGee has stated that the STP Upland OU Removal Site is estimated to contain approximately 4,000 cubic yards (yd³) of potential byproduct material. The Residential Areas Site Engineering Evaluation Cost Estimate (EE/CA) estimated total removal costs to be approximately \$1,290 per yd³ for excavating and disposing of contaminated soil. Although not directly applicable, it is believed that these costs provide a reasonable estimate of the likely costs for the removal at the STP Site. Using these unit costs, excavating and disposing of 2,500 yd³ of contaminated materials from the STP Site, would result in an estimate of approximately \$5,160,000.

The response actions described in this memorandum directly address actual or threatened releases of hazardous substances at the STP Upland OU Removal Site which may pose an imminent and substantial endangerment to public health and safety, and to the environment. These response actions do not impose a burden on affected property disproportionate to the extent to which that property contributes to the conditions being addressed. The response action will comply with the Off-Site Rule (58 F.R. 49200, September 22, 1993). The appropriate State officials in the receiving State will be notified, prior to actual shipment of wastes, that wastes from the STP Upland OU Removal Site will be shipped to a disposal area in that State as part of this response action.

Currently, EPA anticipates that Kerr-McGee would use the REF as a staging area for the wastes, which then would be shipped by rail to a permanent disposal site in Utah concurrent with other wastes from the REF.

This removal action will be conducted in a manner not inconsistent with the NCP. The OSC has initiated planning for provision of post-removal Site control consistent with the provisions of Section 300.415(l) of the NCP. However, elimination or mitigation of the threats is expected to minimize the need for post-removal Site control at the STP Upland OU Removal Site.

Applicable or Relevant and Appropriate Requirements

For all on-Site activities during the removal action at the STP Upland OU Removal Site, compliance with the UMTRCA cleanup criteria is deemed to be compliance with all Federal and State ARARs related to cleanup levels of radioactive contamination at the STP Upland OU Removal Site. The cleanup criteria will be complied with during the removal action to the maximum extent practicable considering the exigencies of the situation. Other Federal and State ARARs have been discussed in Appendix B of the EE/CA for the STP Upland OU Removal Site and address other aspects of the removal action. These ARARs will also be complied with to the extent practicable considering the exigencies of the situation at the STP Upland OU Removal Site.

All hazardous substances, pollutants or contaminants removed off Site pursuant to this removal action for treatment, storage, and disposal will be treated, stored, or disposed of at a facility in compliance, as determined by U.S. EPA, with the U.S. EPA Off-Site Rule, 40 CFR § 300.440.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

Continued risk to public health and the environment will result if no action or delayed action ensues.

VII. OUTSTANDING POLICY ISSUES

None.

VIII. ENFORCEMENT

For administrative purposes, information concerning the enforcement strategy for this Site is contained in the Enforcement Confidential Addendum.

IX. RECOMMENDATION

This decision document represents the selected removal action for the STP Removal Site, in West Chicago, DuPage County, Illinois, developed in accordance with CERCLA as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site (see Attachment 2).

Conditions at the Site meet the NCP section 300.415(b)(2) criteria for a removal, and I recommend your approval of the proposed removal action.

APPROVE: _____

DATE: _____

10/7/03

Director, Superfund Division

DISAPPROVE: _____

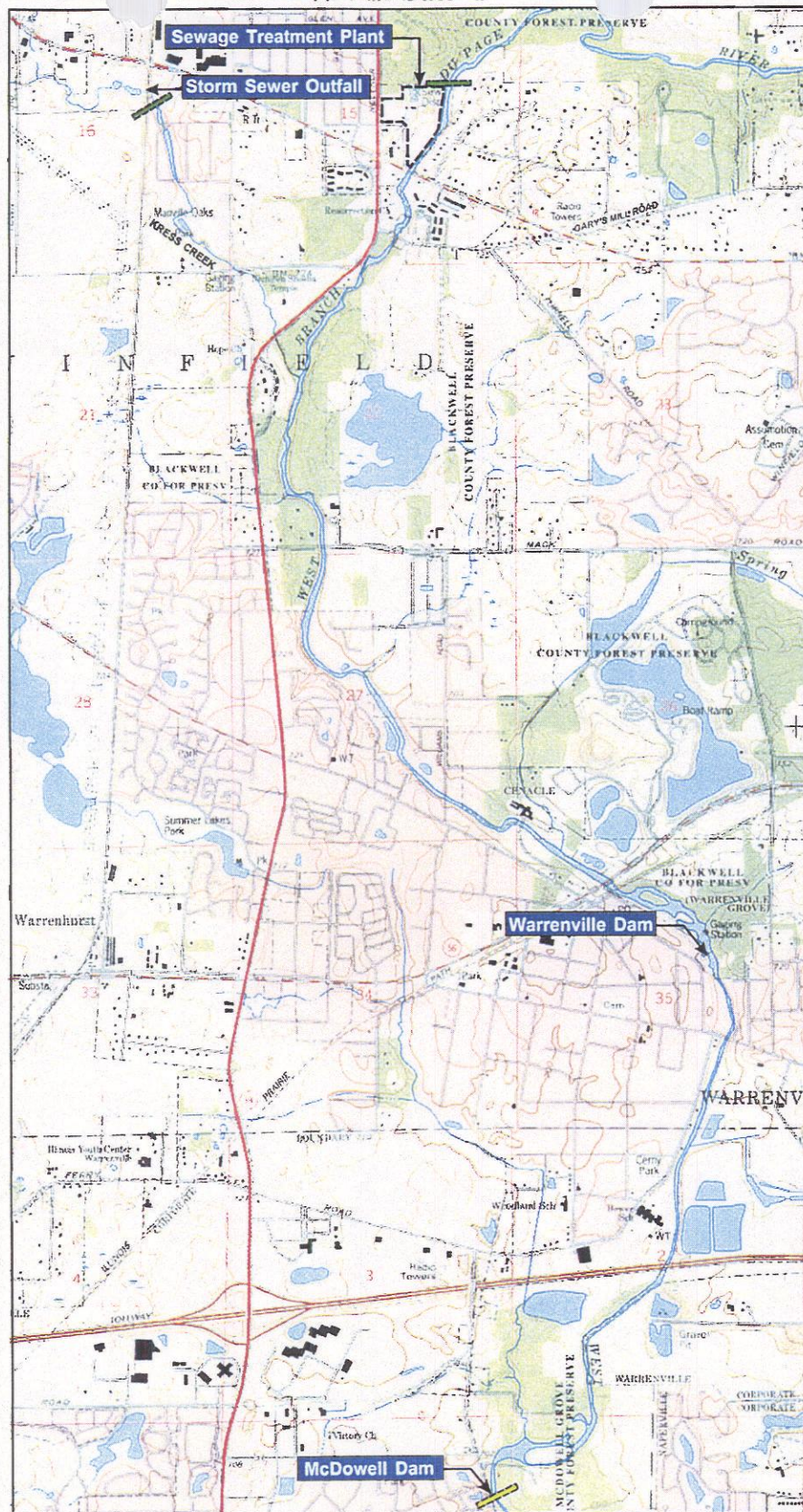
DATE: _____

Director, Superfund Division

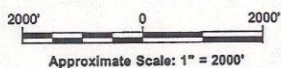
Attachments

1. Figure 1.1 Map Eastern Boundary STP
2. Administrative Record Index
3. Region 5 EJ Analysis

cc: R. Worley, U.S. EPA, 5203-G
M. Chezick, U.S. DOI, w/o Enf. Addendum
R. Cipriano, IEPA, w/o Enf. attachment
S. Davis, IDNR



REFERENCE: BASE MAP USGS 7.5 MIN. QUAD., NAPERVILLE, ILL., 1993.



LEGEND:

- = Indicates Upstream Limit
- = Indicates Downstream Limit



KERR-MCGEE CHEMICAL LLC
KRESS CREEK/WEST BRANCH DUPAGE RIVER AND
SEWAGE TREATMENT PLANT SITES
R/FS STATEMENT OF WORK

SITE LOCATION MAP



FIGURE
2-1



ATTACHMENT 2

U.S. ENVIRONMENTAL PROTECTION AGENCY REMOVAL ACTION

ADMINISTRATIVE RECORD

FOR

KERR-MCGEE WEST CHICAGO SEWAGE TREATMENT PLANT UPLAND OPERABLE UNIT REMOVAL SITE
WEST CHICAGO, DUPAGE COUNTY, ILLINOIS

ORIGINAL
SEPTEMBER 30, 2003

<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
1	09/01/78	Argonne National Laboratory	Nuclear Regulatory Commission	Report: Thorium Residuals in West Chicago, Illinois (NUREG/CR-0413 ANL/ES-67)	34
2	04/00/80	U.S. Nuclear Regulatory Commission	File	Regulatory Guide 4.14: Radiological Effluent and Environmental Monitoring at Uranium Mills (Revision 1)	22
3	09/29/86	CH2M Hill	U.S. EPA	Remedial Investigation Report for the Kerr-McGee Radiation Sites (3 Volumes)	1157
4	04/13/88	Denny, I., Kerr-McGee Chemical Corporation	Meldgin, N., U.S. EPA	Report: Thorium Removal Program at the Kerr-McGee Sewage Treatment Plant (2 Volumes)	
5	09/30/93	Tremaine, J., CH2M Hill	Seely, D., U.S. EPA	Technical Memorandum: Source Characterization and Hydrologic Assessment for the Kerr-McGee Sewage Treatment Plant Site (FINAL)	270
6	01/07/95	Turner, A., CH2M Hill	Seely, D. & R. Frey, U.S. EPA	Memorandum re: Mixed Waste Potential for the Kerr- McGee NPL Sites	29
7	03/02/95	Turner, A., CH2M Hill	Seely, D., U.S. EPA	Technical Memorandum: Source Characterization and Hydrologic Assessment for the Kerr-McGee Sewage Treatment Plant/West Branch DuPage River Site (FINAL)	55
8	03/27/96	Flora, L., CH2M Hill	Seely, D., U.S. EPA	Data Quality Evaluation Technical Memorandum: NAREL Samples for the Kerr-McGee Reed-Keppler Park, Sewage Treatment Plant and Kress Creek Sites w/ Cover Letter	90

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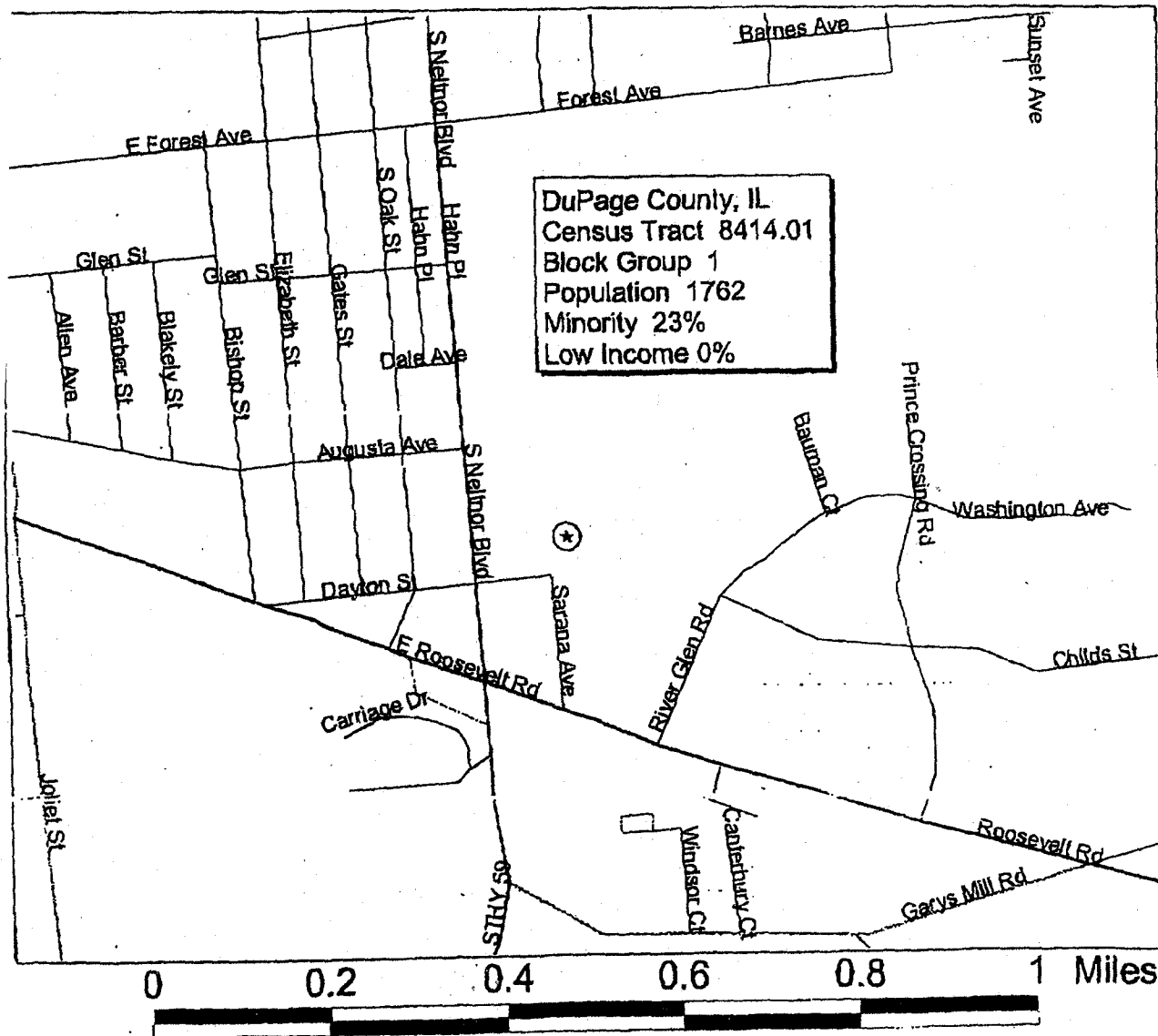
<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PA</u>
9	08/09/96	Flora, L., CH2M Hill	Seely, D., U.S. EPA	Addendum to the Data Quality Evaluation Tech- nical Memorandum: NAREL Samples for the Kerr-McGee Reed-Keppler Park, Sewage Treatment Plant and Kress Creek Sites w/ Cover Letter	
10	03/13/97	Illinois Administrative Code	File	Licensing Requirements for Source Material Milling Facilities (Title 32, Chapter II, Subchapter b, Part 332)	
11	07/01/98	Code of Federal Regulations	File	Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings (40 CFR 192)	
12	05/07/03	CH2M Hill	U.S. EPA	West Chicago Kress Creek and Sewage Treatment Plant Characterization Data	
13	06/20/03	Fortner, M., City of West Chicago	Frey, R., U.S. EPA	Letter re: City of West Chicago's Regional Waste- water Treatment Plant	
14	07/00/03	Kerr-McGee Chemical, LLC	U.S. EPA	Engineering Drawings for the Proposed Removal Action at the Upland Portion of the Sewage Treatment Plant	
15	07/07/03	Kerr-McGee Chemical, LLC	U.S. EPA	Downhole Drilling and Surface Gamma Data for Kress Creek and West Branch of DuPage River Sewage Treatment Plant to McDowell Dam (PRIV- ILEGED AND CONFIDENTIAL FOR SETTLEMENT DISCUS- SIONS ONLY. HAS NOT BEEN COPIED FOR PHYSICAL INCLUSION INTO THE ADMINISTRATIVE RECORD)	
16	08/04/03	Flatter, R., City of West Chicago	Fulghum, M., U.S. EPA	Letter re: City of West Chicago's Support for Completion of a Time Critical Removal Action at the Wastewater Treat- ment Plant	
17	08/26/03	Frey, R., U.S. EPA	Krippel, M., Kerr-McGee Chemical, LLC	Letter re: U.S. EPA's Approval of the Investi- gation Work Plan for the Kress Creek/West Branch DuPage River Site	

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<u>NO.</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>RECIPIENT</u>	<u>TITLE/DESCRIPTION</u>	<u>PAGES</u>
18	09/01/03	Kerr-McGee Chemical, LLC	U.S. EPA	Scoping and Planning Documents for the Removal Action at the Upland Portion of the Sewage Treatment Plant Site	205
19	00/00/00	U.S. EPA	Kerr-McGee Chemical, LLC	Administrative Order on Consent for Removal Action at the Kerr-McGee Sewage Treatment Plant Upland Operable Unit (PENDING)	
20	00/00/00	Mitchell, J., U.S. EPA	Muno, W., U.S. EPA	Action Memorandum: Request for a Time- Critical Removal Action at the Kerr-McGee Sewage Treatment Plant Site (PENDING)	

Region 5 Superfund EJ Analysis

Kerr-McGee Sewage Treatment Plant Site West Chicago, IL



State of Illinois averages:
Minority: 25%
Low Income: 27%

U.S. EPA Region 5
Environmental Justice Case Criteria
for State of Illinois

Minority: 50% or greater
Low Income: 54% or greater

⊙ Site Location

Date of Map: 7/8/03

Source of Map: Census 2000 Database/
ArcView 3.0

SEWAGE TREATMENT PLANT

WEST DAPAGE
FOREST PRE

FORGET SURPRISE

GARYS MILL ROAD

WEST BRANCH DUPEGE RIVER

ROY

ROY C. BLACKWELL
FOREST PRESERVE





**FOREST PRESERVE
MAINTENANCE FACILITY**

MACK ROAD

Figure 2

INVESTIGATION AREA
OUTFALL / SEWAGE TREATMENT PLANT
TO WARRENVILLE DAM
AND THE McDOWELL DAM AREA

LAND TYPE

	FOREST PRESERVE
	RESIDENTIAL
	PARK
	COMMERCIAL
	GOVERNMENT



0 600 1,200 Feet

SCALE 1" = 600'

COORDINATES: ILLINOIS EAST NAD 23

DATE 9/27/02

Appendix D
"Work Plan"



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

October 7, 2003

REPLY TO THE ATTENTION OF:
(SE-5J)

H.W. Holmberg
Safety and Environmental Affairs Division
Kerr-McGee Chemical LLC
123 Robert S. Kerr Avenue
Oklahoma City, OK 73102

Re: *Revised Scoping and Planning Documents for the Removal Action at the Upland Portion of the Sewage Treatment Plant Site DuPage County, Illinois, dated September 1, 2003.*

Dear Mr. Holmberg:

The United States Environmental Protection Agency (EPA) has reviewed Kerr-McGee's revised Scoping and Planning Documents ("Work Plan") as well as Associated Appendices, Attachments and Subparts to Appendices and Attachments for the Removal Action at the Upland Portion of the Sewage Treatment Plant (STP) Site DuPage County, Illinois. Based on this latest review, all of EPA's suggested changes or clarifications have been satisfactorily addressed and incorporated into the revised Work Plan.

Please be advised that EPA hereby approves the Work Plan as submitted, including all Associated Appendices, Attachments and Subparts to Appendices and Attachments. This approval serves only for the anticipated removal action at the Upland Portion of the STP Site. Please note that if Kerr-McGee makes any additional changes to the Work Plan, Kerr-McGee should submit copies of all Interim Change Notices to EPA. EPA reserves the right to review and approve or disapprove any future changes to the Work Plan.

Please let me know if you have any questions about this letter. I look forward to our continued work together on this project.

Sincerely,

James R. Mitchell
Federal On-Scene Coordinator
Superfund Division

SILT FENCE
SILT FENCES MUST BE INSTALLED IN ACCORDANCE WITH THE DETAIL FROM THE SUPPLEMENTAL SPECIFICATIONS TO THE STANDARD SPECIFICATIONS FOR ILLINOIS HIGHWAYS.

STRAW BALE FILTER DETAIL

NOTES:
1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ILLINOIS STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES.
2. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ILLINOIS STANDARD SPECIFICATIONS FOR WATERWAYS AND MARINE STRUCTURES.
3. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ILLINOIS STANDARD SPECIFICATIONS FOR AIRPORTS AND OBSTRUCTION LIGHTS.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE ILLINOIS STANDARD SPECIFICATIONS FOR UTILITIES AND STRUCTURES.

EXCAVATION SEQUENCE
1. 48" OUTFALL PIPE & HEADWALL
2. NORTH AREA
3. OAK TREE AREA
4. OUTFALL PIPE AREA
5. 24" PIPE AREA

LEGEND
- - - - - APPROXIMATE UTILITY LOCATION
- - - - - 6" P. STORM SEWER
- - - - - 18" P. STORM SEWER
- - - - - 24" P. STORM SEWER
- - - - - 36" P. STORM SEWER
- - - - - 48" P. STORM SEWER
- - - - - 60" P. STORM SEWER
- - - - - 72" P. STORM SEWER
- - - - - 84" P. STORM SEWER
- - - - - 96" P. STORM SEWER
- - - - - 108" P. STORM SEWER
- - - - - 120" P. STORM SEWER
- - - - - 144" P. STORM SEWER
- - - - - 168" P. STORM SEWER
- - - - - 192" P. STORM SEWER
- - - - - 216" P. STORM SEWER
- - - - - 240" P. STORM SEWER
- - - - - 264" P. STORM SEWER
- - - - - 288" P. STORM SEWER
- - - - - 312" P. STORM SEWER
- - - - - 336" P. STORM SEWER
- - - - - 360" P. STORM SEWER
- - - - - 384" P. STORM SEWER
- - - - - 408" P. STORM SEWER
- - - - - 432" P. STORM SEWER
- - - - - 456" P. STORM SEWER
- - - - - 480" P. STORM SEWER
- - - - - 504" P. STORM SEWER
- - - - - 528" P. STORM SEWER
- - - - - 552" P. STORM SEWER
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- - - - - 696" P. STORM SEWER
- - - - - 720" P. STORM SEWER
- - - - - 744" P. STORM SEWER
- - - - - 768" P. STORM SEWER
- - - - - 792" P. STORM SEWER
- - - - - 816" P. STORM SEWER
- - - - - 840" P. STORM SEWER
- - - - - 864" P. STORM SEWER
- - - - - 888" P. STORM SEWER
- - - - - 912" P. STORM SEWER
- - - - - 936" P. STORM SEWER
- - - - - 960" P. STORM SEWER
- - - - - 984" P. STORM SEWER
- - - - - 1008" P. STORM SEWER
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- - - - - 1056" P. STORM SEWER
- - - - - 1080" P. STORM SEWER
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- - - - - 1128" P. STORM SEWER
- - - - - 1152" P. STORM SEWER
- - - - - 1176" P. STORM SEWER
- - - - - 1200" P. STORM SEWER
- - - - - 1224" P. STORM SEWER
- - - - - 1248" P. STORM SEWER
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- - - - - 1296" P. STORM SEWER
- - - - - 1320" P. STORM SEWER
- - - - - 1344" P. STORM SEWER
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- - - - - 1680" P. STORM SEWER
- - - - - 1704" P. STORM SEWER
- - - - - 1728" P. STORM SEWER
- - - - - 1752" P. STORM SEWER
- - - - - 1776" P. STORM SEWER
- - - - - 1800" P. STORM SEWER
- - - - - 1824" P. STORM SEWER
- - - - - 1848" P. STORM SEWER
- - - - - 1872" P. STORM SEWER
- - - - - 1896" P. STORM SEWER
- - - - - 1920" P. STORM SEWER
- - - - - 1944" P. STORM SEWER
- - - - - 1968" P. STORM SEWER
- - - - - 1992" P. STORM SEWER
- - - - - 2016" P. STORM SEWER
- - - - - 2040" P. STORM SEWER
- - - - - 2064" P. STORM SEWER
- - - - - 2088" P. STORM SEWER
- - - - - 2112" P. STORM SEWER
- - - - - 2136" P. STORM SEWER
- - - - - 2160" P. STORM SEWER
- - - - - 2184" P. STORM SEWER
- - - - - 2208" P. STORM SEWER
- - - - - 2232" P. STORM SEWER
- - - - - 2256" P. STORM SEWER
- - - - - 2280" P. STORM SEWER
- - - - - 2304" P. STORM SEWER
- - - - - 2328" P. STORM SEWER
- - - - - 2352" P. STORM SEWER
- - - - - 2376" P. STORM SEWER
- - - - - 2400" P. STORM SEWER
- - - - - 2424" P. STORM SEWER
- - - - - 2448" P. STORM SEWER
- - - - - 2472" P. STORM SEWER
- - - - - 2496" P. STORM SEWER
- - - - - 2520" P. STORM SEWER
- - - - - 2544" P. STORM SEWER
- - - - - 2568" P. STORM SEWER
- - - - - 2592" P. STORM SEWER
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- - - - - 2808" P. STORM SEWER
- - - - - 2832" P. STORM SEWER
- - - - - 2856" P. STORM SEWER
- - - - - 2880" P. STORM SEWER
- - - - - 2904" P. STORM SEWER
- - - - - 2928" P. STORM SEWER
- - - - - 2952" P. STORM SEWER
- - - - - 2976" P. STORM SEWER
- - - - - 3000" P. STORM SEWER
- - - - - 3024" P. STORM SEWER
- - - - - 3048" P. STORM SEWER
- - - - - 3072" P. STORM SEWER
- - - - - 3096" P. STORM SEWER
- - - - - 3120" P. STORM SEWER
- - - - - 3144" P. STORM SEWER
- - - - - 3168" P. STORM SEWER
- - - - - 3192" P. STORM SEWER
- - - - - 3216" P. STORM SEWER
- - - - - 3240" P. STORM SEWER
- - - - - 3264" P. STORM SEWER
- - - - - 3288" P. STORM SEWER
- - - - - 3312" P. STORM SEWER
- - - - - 3336" P. STORM SEWER
- - - - - 3360" P. STORM SEWER
- - - - - 3384" P. STORM SEWER
- - - - - 3408" P. STORM SEWER
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- - - - - 3528" P. STORM SEWER
- - - - - 3552" P. STORM SEWER
- - - - - 3576" P. STORM SEWER
- - - - - 3600" P. STORM SEWER
- - - - - 3624" P. STORM SEWER
- - - - - 3648" P. STORM SEWER
- - - - - 3672" P. STORM SEWER
- - - - - 3696" P. STORM SEWER
- - - - - 3720" P. STORM SEWER
- - - - - 3744" P. STORM SEWER
- - - - - 3768" P. STORM SEWER
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- - - - - 3912" P. STORM SEWER
- - - - - 3936" P. STORM SEWER
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- - - - - 3984" P. STORM SEWER
- - - - - 4008" P. STORM SEWER
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